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# MINERAL HOT SPRINGS IN THE NATIONAL PARKS OF CANADA

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Miette Hot Springs, Jasper National Park.

This pamphlet has been compiled by the Natural and Historic Resources Branch in co-operation with the Geological Survey of Canada, Department of Mines and Technical Surveys.

Issued under the authority of  
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Minister of Northern Affairs and National Resources.

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QUEEN'S PRINTER AND CONTROLLER OF STATIONERY  
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# MINERAL HOT SPRINGS IN THE NATIONAL PARKS OF CANADA

## The Origin of Hot Springs

Nearly all of Canada's hot springs occur in the western mountainous belt—the best known ones being the Cave and Basin and Upper Hot Springs in Banff National Park, Radium Hot Springs in Kootenay National Park and Miette Hot Springs in Jasper National Park. These form part of a great chain of springs which extends southward from Circle in Alaska, through Yukon, British Columbia, and the Western United States down into Mexico.

Geologists tell us that the waters in these springs are of surface origin. Water from rain or snow falling on the mountains, percolates downward, through cracks, fissures and faults. It becomes heated as it comes in contact with hot rock masses at great depth. The steam generated by this heat rises through cracks in the rocks, condenses into water and gushes out as hot springs.

Hot springs have been a source of interest to man for many centuries and have figured largely in health treatment since the time of Hippocrates, the "Father of Medicine". He apparently believed in "water externally, internally, and eternally", not as a panacea for all ills, but as an effective aid to better health.

Most of the Canadian hot springs were known to the Indians long before the first white man crossed the "Great Mountain Barrier" of the Rockies. They visited them frequently and had great faith in the curative and mystic powers of the waters. Today these same springs have a wide reputation for healthful qualities and are enjoyed each year by thousands of persons of all ages and from all walks of life.

## The Origin of National Parks

It was the discovery of hot springs bubbling from the slopes of Sulphur Mountain in the Rockies that led to the establishment of Canada's first national park. Workers searching for a route for the pioneer trans-continental railway to penetrate the "Great Mountain Barrier" saw clouds of vapour billowing up from springs near the Bow River, and reported this wonder of nature to the Government of Canada. In 1885 farsighted legislators took prompt action to reserve this area for the Nation, and in 1887 Rocky Mountains (now Banff) National Park was established. The earlier reservation was enlarged to form the first link in a chain of national parks which now stretches from the Selkirk Mountains in British Columbia to the rugged coasts of Newfoundland and covers a total area of more than 29,000 square miles.

## What are National Parks?

The main purpose of the national parks is to preserve typical areas of Canada in their natural state for the benefit, education and enjoyment of present and future generations. Mountains, glaciers, waterfalls, canyons, caves, hot springs and other phenomena of nature and birds, animals, trees and plants are totally protected.

All parks are divided into wardens' districts, and each warden patrols his district to prevent damage by fire or other causes. They are the guardians of this valuable heritage for the people of Canada.

### Banff Hot Springs, Banff National Park, Alberta

There are five main hot springs near Banff townsite, of which three have been developed. Easily accessible are the Cave and Basin Springs, situated about a mile from the Park Administration Building. These springs feed a natural sulphur water pool, which includes a shallower wading section for children. There is also a larger fresh water pool here for more active swimmers. It is 150 by 35 feet, with a chlorinated, filtered and continuously circulated water supply.

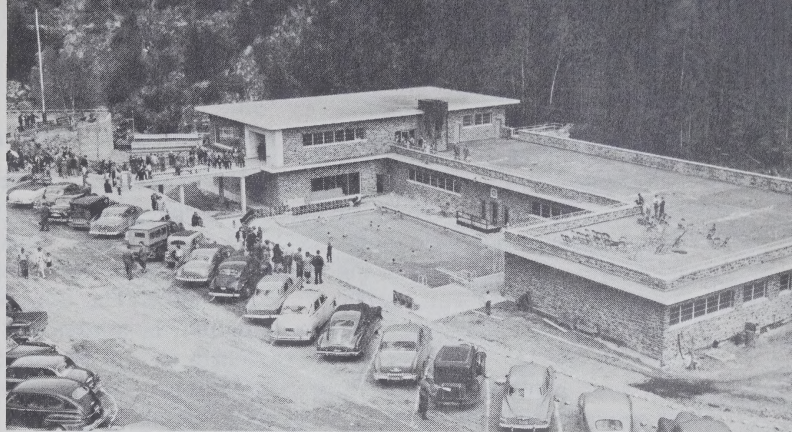
The Cave—reached from the east end of the building—encloses one of the original springs for which the first national park was established.



Cave and Basin  
Hot Springs,  
Banff National Park.



Aquacourt,  
Radium Hot Springs,  
Kootenay National Park.



The Cave and Basin Springs with a combined daily flow of 575,000 gallons, feed the sulphur water pool. The temperature of the water is 88 degrees F., while that of the fresh water pool is approximately 80 degrees F. Dressing rooms are available to the public daily from about May 15th to September 15th.

The other installation is at the Upper Hot Springs, situated on the slopes of Sulphur Mountain about two and a half miles by road from the townsite. A daily flow of 172,000 gallons supplies a fine bathing establishment with a large outdoor pool open the year round. Dressing-rooms, plunge baths and steam-rooms are available for public use. The water in the pool is maintained at a temperature of about 100 degrees F. Facilities here include massage, tea room and snack bar.

## **Radium Hot Springs, Kootenay National Park, British Columbia**

The development at Radium Hot Springs is just inside the western park entrance. The waters, which have a temperature of 113 degrees F. at their source, issue from shattered rocks at the base of Redstreak Mountain in the valley formed by Sinclair Creek. These hot springs have a flow of about 475,000 gallons daily and supply the Aquacourt—a modern bathing establishment completed in 1950. The Aquacourt—of attractive architectural design—provides two outdoor pools, dressing accommodation, lockers, and showers. These facilities are available throughout the year. Also in the Aquacourt are plunge pools, steam-rooms, and a massage concession, under the supervision of qualified operators. These, and a coffee shop, are open from June through September. There is an elevator for the convenience of wheel-chair patients and a broad roof terrace for sunbathers and spectators.

## Miette Hot Springs, Jasper National Park, Alberta

Miette Hot Springs, four in number, issue from a series of fissures and cracks in the narrow gorge of Sulphur Creek, a tributary of Fiddle River. These springs, located about 38 miles from Jasper townsite, and easily reached by car, are among the hottest on the continent. The temperature of one spring reaches 129 degrees F. at its source. The flow of the springs has been estimated at 125,000 gallons daily and the waters are piped to a commodious bathing establishment on the north side of the valley.

It is equipped with a large pool, plunges, steam-rooms, and dressing accommodation. The pool, graduated in depth, has flood and underwater lighting for evening use. A convenient balcony overlooking the pool provides a vantage point for visitors. The temperature of the pool is maintained at about 90 degrees F. An experienced staff is in charge during its operating period from approximately May 15th to September 15th.

### Chemical Character of the Springs

The water in most hot springs contains various dissolved salts and gases. On reaching the surface the gases are liberated into the air and the salts are precipitated near the outlets, forming calcareous (limy) deposits and siliceous sinters. Algae or microscopic plants abound in most hot springs and often give the waters a beautiful milky sapphire blue or deep emerald green colour. Most of the deposits associated with the Banff, Radium and Miette Springs are of a limy nature and contain some sulphates, yellowish-white sulphur, and reddish-brown and greenish-blue algae.

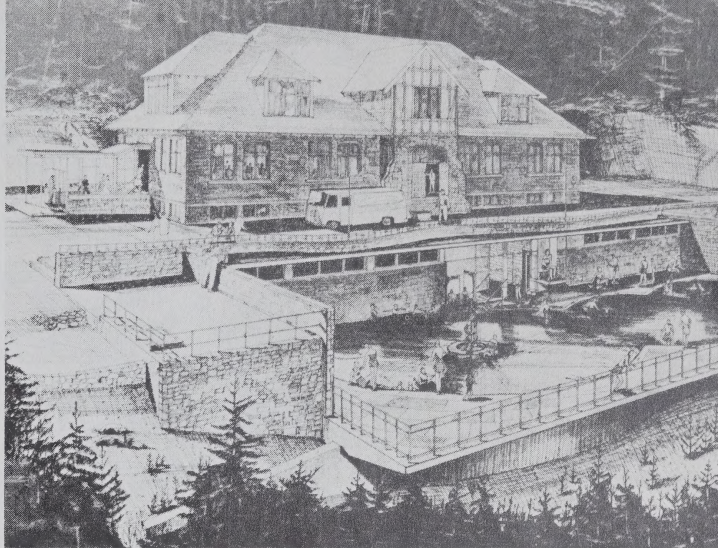
The quality of the waters in the Banff, Radium and Miette Springs is similar, and all contain about the same small amounts of dissolved salts. The principal salts present are calcium sulphate, magnesium sulphate (epsom salt), sodium sulphate (Glauber's salt), and calcium bicarbonate, all more or less beneficial when taken in small amounts. In addition to these salts the waters contain variable small amounts of iron, manganese, aluminum, boron, silica and potassium. The principal gases are nitrogen, carbon dioxide, argon, helium and radon. Hydrogen sulphide is also present in the Banff and Miette Springs.

For example, the large chlorinated pool at the Aquacourt in Kootenay National Park contains in each million cubic centimetres the following components according to chemical analysis of a sample: sulphate, 302 parts; calcium, 135; bicarbonate, 100.8; silica, 31.8; magnesium, 31.6; sodium, 18.4; chloride, .17; fluoride, .37; nitrate, .6 and alumina and iron oxide, 3.6. The total dissolved solids are calculated at 707.6 parts per million.

All of these hot springs are more or less radioactive, those at Banff being a little higher than the springs in the other two parks. The amount of radioactivity is quite harmless and is much less than that emanating from an ordinary watch dial. The radioactivity results mainly from minute traces of



Architect's sketch,  
Redesigned Pool,  
Upper Hot Springs,  
Banff National Park.



radium dissolved in the waters and to radon, a gaseous emanation derived from the disintegration of radium.

Much has been written about the therapeutic and medicinal value of mineral waters, and each spring is reputed to possess especial benefits for certain ills. In this respect it is perhaps worth mentioning that the waters in these springs in Canada resemble closely the waters from the world-famous sulphur springs at Bath, England and in other well known European Spas.

### General Information

While attendants are on duty during the hours that bathing establishments are open to the public, persons using pools, plunges, steam-rooms and other facilities do so at their own discretion and risk.

Accommodation is not provided within the Park bathing establishments, but may be found at hotels, motels, cabins or campgrounds in the vicinity.

### F E E S

Fees for the use of bathing facilities at these hot springs are:

	<i>Single Use</i>	<i>Book of 10 Tickets</i>	<i>Book of 20 Tickets</i>
Adult Swim .....	\$ .50	\$ 4.25	\$ 7.00
Child Swim .....	.25	2.00	3.00
Plunge or Steam Bath .....	1.50	12.50	20.00
Bathing Suit .....	.20		
Towel .....	.15		
Safety Envelope .....	.10		



Plants, animals and all other natural features of National Parks are protected and preserved for all who may come this way. Please do not remove or damage them.